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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/851,934	05/10/2001	Marufa Kaniz	F0674	4058

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HARRITY SNYDER, LLP
11350 Random Hills Road
SUITE 600
FAIRFAX, VA 22030

EXAMINER	
MURPHY, RHONDA L	

ART UNIT	PAPER NUMBER
2667	

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/851,934	KANIZ ET AL.	
	Examiner	Art Unit	
	Rhonda Murphy	2667	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17 and 19-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17 and 19-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 May 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This communication is responsive to the amendment filed on October 11, 2005. Accordingly, claims 1-17 and 19-21 are currently pending in this application.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1 – 9, 12 – 17 and 19 – 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yik et al. (US 6,697,873) in view of Kalapathy e al. (US 6,810,037) and Yazaki et al. (US 2004/0202184).

Regarding claim 1, Yik teaches a multiport switch (Fig. 2, switch **115**) comprising receive ports receiving frames in a packet-switched network (Fig. 2, ports **120a-120d**), the frames having a source field indicating the source of the frame and a destination field indicating an intended destination for the frame (it is known in the art that frames contain source and destination fields); transmit ports configured to transmit the frames in the packet-switched network (Fig. 2, ports **120a-120d**); and an internal rules checking circuit (Fig. 2, elements **210**,**220a** and **220b** combined) coupled to the receive ports and configured to determine frame forwarding information for the received frames (col. 4, lines 40-45), the internal rules checking circuit including address lookup tables (Fig. 2

and 3, elements **220a** and **220b**), each of the address lookup tables including addressable table entries for storing information relating to the frames (Fig. 3, col. 4, lines 46-53), each of the addressable table entries including at least a vector field that identifies ports corresponding to the frames of the addressable table entries (Fig. 3, col. 5, lines 1-2) and an address field that identifies network addresses of the frames (Fig. 3, col. 4, lines 66-67).

Yik fails to explicitly disclose multiple entries having the same address being alternately written to different address lookup tables.

However, Kalapathy teaches an internal rules checking circuit (Fig. 39) being further configured to write to the addressable entries of the address lookup tables such that multiple entries are alternately written to different ones of the address lookup tables (Fig. 40b; col. 1, lines 42-53; col. 24, lines 29-41).

In view of this, it would have been obvious to one skilled in the art to modify Yik's system by including multiple entries alternately written to different address lookup tables, for the purpose of optimizing the address search and increasing throughput (col. 24, lines 37-40).

Furthermore, Yazaki teaches multiple entries having the same address in the address tables written to different ones of the address lookup tables (page 7, paragraph 112).

In view of this, it would have been obvious to one skilled in the art to modify Yik and Kalapathy's teaching to include the same address written to different tables, for the purpose of rapidly locating a particular address within a table.

Regarding claim 2, Yik further teaches receive and transmit ports as media access control (MAC) ports in an Ethernet network (col. 2, lines 62-63; col. 5, lines 1-2).

Regarding claim 3, Yik further teaches address lookup tables including a first address lookup table (Fig. 3, table **220a**) and a second address lookup table (Fig. 3, table **220b**); the internal rules checker determining the address of the addressable table entries to write to based on a hash value generated using the network address of the frame (col. 5, lines 11-20).

Regarding claim 4, Yik further teaches serially chaining multiple entries written to the address tables using a pointer field in each addressable table entry (col. 6, lines 4-13).

Regarding claim 5, Yik teaches an internal rules checking circuit and first and second address lookup tables.

Yik fails to teach first and second search circuits that simultaneously search for an entry in the first and second address lookup tables.

However, Kalapathy teaches searching the first address sub-table with a first search engine, and simultaneously searching the second address sub-table with a second search engine (col. 1, lines 50-53).

In view of this, having the system of Yik and then given the teachings of Kalapathy, it would have been obvious to one having ordinary skill in the art at the time the invention was made, to modify the system of Yik, by including search circuits to simultaneously search the address lookup tables in order to locate the address at a faster rate, thus providing a more efficient method of forwarding frames.

Regarding claim 6, Yik teaches an internal rules checking circuit that determines frame forwarding information.

Yik fails to teach determining the frame forwarding information based on the result of a simultaneous search by the first and second search circuits.

However, Kalapathy teaches determining the frame forwarding information based on the result of a simultaneous search by the first and second search circuits (col. 24, lines 27-41).

In view of this, having the system of Yik and then given the teachings of Kalapathy, it would have been obvious to one having ordinary skill in the art at the time the invention was made, to modify the system of Yik, by concurrently using search circuits to obtain frame forwarding data, in order to provide more rapid means of forwarding data to its destination.

Regarding claim 7, Yik teaches calculating a row address of the lookup table based on a hash value of a network address associated with an entry in the lookup table (col. 5, lines 8-14); storing the entry in one of the first sub-table and the second sub-table at the calculated row address (col. 5, lines 21-25, 40-47); and accessing the entries stored in the lookup table (col. 7, lines 51-53).

Yik fails to teach alternately storing multiple entries having identical calculated row addresses in the first and second sub-tables; and simultaneously reading stored entries.

However, Kalapathy teaches alternately storing multiple entries having calculated row addresses in the first and second sub-tables (Fig. 40b; col. 1, lines 42-53; col. 24,

lines 19-27) simultaneously reading entries stored at an address in the first and second sub-tables (col. 24, lines 27-41).

In view of this, it would have been obvious to one having ordinary skill in the art at the time the invention was made, to modify Yik's method by alternately storing multiple entries and simultaneously reading address tables, for the purpose of locating the address at a faster rate, thus providing a more efficient method of forwarding frames.

Furthermore, Yazaki teaches identical row addresses in the sub-tables (page 7, paragraph 112).

In view of this, it would have been obvious to one skilled in the art to modify Yik and Kalapathy's teaching to include identical row addresses in the sub-tables, in order to provide a faster means of locating a particular address.

Regarding claim 8, Yik further teaches creating a chain of entries beginning at the calculated row address (col. 5, lines 40-47).

Regarding claim 9, Yik further teaches implementing the chains of entries as a linked list (col. 5, lines 45-51).

Regarding claim 12, Yik further teaches reading a port vector field from one of the entries that matches a frame associated with the desired address (col. 5, lines 1-2).

Regarding claim 13, Yik further teaches generating a frame forwarding descriptor that includes information from the port vector field (col. 4, lines 19-26).

Regarding claim 14, Yik teaches calculating a first row address at which the information is to be stored (col. 5, lines 8-14); and storing the information in the

determined sub-table in the first available entry at the first row address as a table entry (col. 5, lines 51-54).

Yik fails to disclose determining to store the information in the first sub-table when a previous entry at the first row address was stored in the second sub-table and determining to store the information in the second sub-table when the previous entry at the first row address was stored in the first sub-table.

However, Kalapathy teaches determining to store the information in the first sub-table when a previous entry at the first row address was stored in the second sub-table (col. 24, lines 19-27; even addresses stored in table 211; see Fig. 40b) and determining to store the information in the second sub-table when the previous entry at the first row address was stored in the first sub-table (col. 24, lines 19-27; odd addresses stored in table 212; see Fig. 40b)

In view of this, it would have been obvious to one skilled in the art to modify Yik's method of determining to store the information in the first or second sub-table based on the previous entry, so as to maintain an address table with alternating entries using even and odd addresses.

Furthermore, Yazaki teaches multiple entries having the same address in the address tables written to different ones of the address lookup tables (page 7, paragraph 112).

In view of this, it would have been obvious to one skilled in the art to modify Yik and Kalapathy's teaching to include the same address written to different tables, for the purpose of rapidly locating a particular address within a table.

Regarding claim 15, Yik teaches data frame information being transmitted in an Ethernet network (col. 4, lines 10-14).

Regarding claim 16, Yik teaches calculating the first row address based on the hash value of a network address of the data frame (col. 5, lines 11-20).

Regarding claim 17, Yik teaches storing the information in the determined sub-table includes storing multiple table entries in a link list structure (col. 5, lines 40-45), each of the entries being in the same first and second sub-table and having the same calculated row address (col. 5, lines 45-54).

Regarding claim 19, the combined teachings of Yik, Kalapathy and Yazaki teach all of the limitations set forth in the rejection of claim 1, as described above. Yik further teaches searching address tables to identify the frame forwarding information for the received frames.

Yik fails to teach a simultaneous search of the address tables.

However, Kalapathy teaches a simultaneous search of the address tables (col. 1, lines 50-53).

In view of this, having the system of Yik and then given the teachings of Kalapathy, it would have been obvious to one having ordinary skill in the art at the time the invention was made, to modify the system of Yik, by simultaneously searching the address tables in order to locate the address at a faster rate, thus providing a more efficient method of forwarding frames.

Regarding claim 20, Yik further teaches receive and transmit ports as media access control (MAC) ports in an Ethernet network (col. 2, lines 62-63; col. 5, lines 1-2).

Regarding claim 21, Yik further teaches a plurality of address tables including a first address table (Fig. 3, table **220a**) and a second address table (Fig. 3, table **220b**); the logic device (Fig. 2, elements **210**,**220a** and **220b** combined) determining the address of the addressable table entries to write to based on a hash value generated using the network address of the frames (col. 5, lines 11-20).

3. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yik, Kalapathy, and Yazaki as applied to claim 8 above, and further in view of Aramaki et al. (US 6,618,760)

Regarding claim 10, Yik and Kalapathy teach first and second sub-tables.

Yik and Kalapathy fail to explicitly teach partitioning the tables into a bin and heap portion.

However, Aramaki teaches tables partitioned into a bin portion and a heap portion (Fig. 7), the bin portion storing a first entry in each of the chains of entries (col. 6, lines 24-30) and the heap portion storing additional entries in each chain of entries (col. 6, lines 32-34).

In view of this, having the system of Yik and Kalapathy and then given the teachings of Aramkai, it would have been obvious to one having ordinary skill in the art at the time the invention was made, to modify the system of Yik and Kalapathy, by partitioning the tables into bin and heap portions, in order to distinguish the addresses from one another.

4. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yik, Kalapathy, and Yazaki as applied to claim 7 above, and further in view of Brown (US 2003/0026259).

Regarding claim 11, Yik and Kalapathy teach calculating the row address based on the hash value.

Yik and Kalapathy fail to teach concatenating the network address with a virtual local area network index.

However, Brown teaches concatenating the network address with a virtual local area network index to obtain a concatenated value (page 3, paragraph 49); and generating the hash value using a hashing function based on the concatenated value (page 3, paragraph 49).

In view of this, having the system of Yik and Kalapathy and then given the teachings of Brown, it would have been obvious to one having ordinary skill in the art at the time the invention was made, to modify the system of Yik and Kalapathy, by concatenating the network address with a VLAN index, in order to transmit data to a group of users.

Response to Arguments

5. Applicant's arguments with respect to claims 1-17 and 19-21 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rhonda Murphy whose telephone number is (571) 272-3185. The examiner can normally be reached on Monday - Friday 8:00 - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on (571) 272-3179. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Rhonda Murphy
Examiner
Art Unit 2667

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PERVISORY PATENT EXAMIN
12/27/05